

Great-Russians so considerable a difference exists. Vol. I. deals with the superstitions of the peasants, especially as regards witchcraft, to which subject Prof. Antonovich of Kief has devoted a long and interesting essay. According to him, the popular ideas about the subject are "not demonological, but pantheistic." And the authorities seem to have looked upon wizards and witches with some indulgence. In a hundred trials of persons accused of witchcraft in the eighteenth century, he finds scarcely any trace of such cruelty as was shown at an earlier period by British or German legal officials, or by the Inquisition in the south of Europe. Burnings were unknown. Convicted warlocks were generally mulcted in a fine paid to the Church. In the few cases in which they were punished more severely, the unusual harshness of the court was due to the fact that the complainant belonged to the class of nobles. The second volume contains a valuable collection of 146 skazki or folk-tales, 31 of which are classed as "mythical." It forms an important supplement to Rudchenko's excellent "Collection of South-Russian Tales." Vols. iii.-v. contains an immense number of folk-songs, and a list of days to which the peasants pay special attention. The sixth volume is devoted to popular jurisprudence in general and the village courts in particular, and the seventh to statistics, giving a complete account of the Little-Russians themselves, and of the rest of the population, whether of Polish, Jewish, or other extraction.

#### TEMPERATURE OF THE SOIL DURING WINTER

THE French physicists, Edmond and Henry Becquerel, took advantage of the intense cold prevailing at Paris last December, to study the changes in temperature below the surface of the soil under various conditions. It is a widely-spread belief among farmers, that when protected by a layer of snow, crops sown in the autumn are effectually guarded against freezing. This opinion, however, must lose much of its weight in view of these late observations, which we will briefly summarise.

The observations were made by means of Becquerel's electric thermometer, which consists simply of two wires isolated by a coating of gutta percha, and soldered together at their extremities. Differences in temperature between the two places of junction cause electric currents varying in intensity with the greatness of the difference. A magnetic needle, brought under the influence of the current, registers on a dial these differences. The wires were inserted in the Jardin des Plantes at various depths varying from 5 to 60 centimetres, and observations were made from November 26 to the close of December. Frost first appeared in the Garden November 26. December 3 snow fell in abundance, and the temperature of the air sank to  $-11^{\circ}\text{C}$ . The layer of snow was 25 centimetres deep. December 10, the temperature had sunk to  $-21^{\circ}$ , and commenced then gradually to rise. December 15, the snow was 19 centimetres in depth.

Coming now to the observations made below the surface of the ground under the above circumstances, we find at once a striking difference between the results obtained in soil covered with grass, and those obtained below a bare surface of the ground. In soil protected by grass, before as well as after the snowfall, at all depths below that of 5 centimetres, the temperature never descended below  $0^{\circ}\text{C}$ . Registering  $3^{\circ}\cdot 5$  at the depth of 5 centimetres on November 26, it slowly sank to  $0^{\circ}\cdot 18$  on December 14. The presence of grass would appear, then, to effectually protect the earth beneath it from freezing at the lowest temperatures attained in our climate. Quite different results, however, are yielded in the absence of grass. In this case at a depth of 5 centimetres the thermometer sank below zero on November 27. Two days later it registered  $-2^{\circ}\cdot 6$ .

On December 3, just before the snowfall, it reached its minimum of  $-3^{\circ}\cdot 17$ . After being covered with snow it registered  $-0^{\circ}\cdot 8$ , and later  $-1^{\circ}\cdot 4$ . The snow here appears to act in a certain measure as a screen against changes in temperature, but its conductive properties are still too marked to prevent these changes from being felt sensibly at a certain depth in the earth. In the case of the agriculturist, this slow conduction, when united to the still slower conductive properties of a tolerably thick layer of dead shoots of cereal crops sown in autumn may frequently insure immunity from freezing to the roots below the surface. T. H. N.

#### NOTES

WE regret to have to announce the death of P. W. Schimper, the well-known Professor of Palæontology in the University of Strassburg, and of Dr. R. H. C. C. Scheffer, the amiable and accomplished director of the Botanic Garden, Buitenzorg, Java, at the early age of thirty-five. Also of two foreign entomologists—Herr Hellmuth von Kiesenwetter at Dresden, in the sixtieth year of his age, and Dr. Snellen van Vollenhoven, formerly Conservator of the Leyden Museum, one of the foremost entomologists of Holland, and author of "Faune Entomologique des Indes Orientales."

WITH reference to Prof. Smyth's communication in regard to the exhibition of aurora on March 17 (*NATURE*, vol. xxi. p. 492), we are informed that the photographic records of the Royal Observatory, Greenwich, show that there was also magnetic disturbance on that day.

DR. W. FARR has been made a C.B.

DR. C. WILLIAM SIEMENS has been elected an honorary member of the American Institute of Mining Engineers.

THERE has just appeared, as Vol. XII. of the Report of the United States Geological Survey of the Territories under Dr. F. V. Hayden, an important monograph on the Freshwater Rhizopods of North America by Dr. Joseph Leidy, the eminent comparative anatomist of Philadelphia. It is a well-printed quarto, and sumptuously illustrated with a series of forty-eight coloured plates. Containing the results of an investigation of materials partly collected during the prosecution of the Survey, it shows the broad scientific spirit in which the operations of Dr. Hayden's Survey were conducted. Dr. Leidy, almost elbowed out of the field of research among the fossil vertebrates of the West, where he was the earliest pioneer, has left that field in possession of his younger friends, Professors Cope and Marsh, and has betaken himself to another and very different domain of scientific research, with which he has long been familiar. To the monograph which he has now issued we hope to call attention in an early number of this journal.

A NEW School of Agriculture is to be opened, to be called the South Wiltshire and Hampshire Agricultural College, at Down-ton, near Salisbury, on April 26. Among the teaching staff will be: Prof. Wrightson for Agriculture, Prof. Church, Chemistry; Prof. Fream, Natural History and Geology; and Prof. Sheldon, Dairy Work. Attached to the college is a mixed farm of 540 acres, to be worked by the students themselves.

At the Royal Institution on Tuesday next (April 6) Prof. Huxley will give the first of a course of two lectures on Dogs and the Problems connected with them; on Thursday (April 8) Prof. Tyndall will give the first of a course of six lectures on Light as a Mode of Motion; on Friday evening (April 9) Prof. Huxley will give a discourse on the Coming of Age of the Origin of Species; and on Saturday (April 10) Mr. James Sully will give the first of a course of three lectures on Art and Vision.

THE large glass disk which has been cast by M. Feil of Paris is not, we are informed, intended for Paris, but for Pulkowa; the Paris glass is already in the hands of the opticians. The exact weight of the Pulkowa disk is 195 kilog. The annealing will be finished next week, after a duration of about twenty-one days. After the completion of the operations M. Feil will begin the casting of the great Pulkowa flint lens. It will weigh 220 kilog., and the time of annealing will be about five weeks.

By permission of M. Hervé Mangon, M. Raoul Pictet has given, in the great amphitheatre of the Conservatoire des Arts et Metiers, a lecture on the Artificial Production of Cold, a question which has become exceedingly practical in Paris, to the discussions raised by the impending transformation of the Morgue. MM. Dumas, Fremy, and other scientific notabilities of Paris were present at the lecture, which will be followed by others, the intention of M. Hervé Mangon being to give similar privileges to any competent person wishing to promulgate any scientific theories.

THIS week the French scientific world is very busy in Paris. The French Association for the Advancement of Science and the delegates of the Sociétés Savantes are holding their meetings at the Sorbonne and other places on the occasion of the Easter holidays. On Friday evening the Société de Physique will hold their annual meeting. The long-expected and deferred reception of Nordenskjöld will very likely give a new interest to all these demonstrations.

MR. PHILIP MAGNUS, B.Sc., B.A., has been elected to the post of Organising Director and Secretary of the City and Guilds of London Technical Institute. The number of applications was fifty-eight. The Drapers' Company having offered a sum of 10,000*l.* towards the new buildings projected for a school of applied science at Cowper Street, conditionally upon an equal sum being raised to meet it, 5,000*l.* is already provided, and it is thought that other companies will be not unwilling to assist in this matter by contributing the remaining portion.

THE court of assistants of the Clockmakers' Company, to encourage the highest excellence in the production of the marine chronometer, have determined to award annually two prizes to the makers of the two chronometers which shall perform with the greatest accuracy under the conditions prescribed by the Astronomer-Royal at the annual trials at the Royal Observatory, Greenwich. The first prize will consist of ten guineas and the freedom of the company, and the second prize five guineas.

VEUVIUS, the Naples correspondent of the *Daily News* telegraphs last Friday, as usual during full moon, shows greatly increased activity. Two new mouths opened last night at the foot of the new cone, sending jets and red-hot stones to a great height, while the lava issued from the central crater. The same correspondent gives some details as to the railway up Vesuvius. The station is situated on a level spot on the west side of the mountain, about half-an-hour's walk from the observatory. The constructors of the railway have adopted the American double iron rope system. There are two lines of rails, each provided with a carriage divided into two compartments and capable of holding six persons. While one carriage goes up the other comes down, thus establishing a counterpoise which considerably economises the steam of the stationary traction engine. The incline is extremely steep, commencing at 40°, increasing to 63°, and continuing at 50° to the summit. Every possible precaution has been taken against accident, and the railway itself is protected against possible flows of lava by an enormous wall. The ascent

will be made in eight to ten minutes, while before it required from one to two hours. To obtain the necessary supply of water, large covered cisterns have been constructed, which in winter will be filled with the snow that often falls heavily on Vesuvius. This snow will be quickly melted by the internal heat, and, besides the water thus obtained, the frequent rainfall will also be conducted into the cisterns.

THE Naples correspondent of the *Daily News* gives, in yesterday's issue, an interesting account of the rise and progress of the zoological station at that city; with most of the facts our readers are already familiar. Several Governments—Italy, Prussia, Russia, Holland, Belgium, Switzerland, Bavaria, Saxony, Würtemberg, Baden, Hesse, Hamburg—have each one or more tables, the British Government being conspicuous by its absence. The Italian Ministry of Marine thinks of hiring a table for the use of the marine officers, to enable them to learn the methods of fishing and preservation of specimens, in order to make collections during their long voyages. Altogether nineteen tables are engaged, which represent an income of 40,000 francs. The income arising from the public aquarium has never yielded more than a sum of 20,000 francs per annum. The remaining expenses have hitherto been covered by subventions from the Imperial German Government, and it is to be hoped that a new yearly subvention of 40,000 francs, which has been petitioned for by the most celebrated scientific men of Germany, and granted by the German Parliament, may be consented to by the Government. The correspondent gives several facts to show the wide utility of this station and its influence on the progress of science.

ON Sunday week a shock of earthquake was felt throughout Moldavia.

A GENERAL meeting of the Mineralogical Society of Great Britain and Ireland will be held in the University of Edinburgh on Monday, April 5, at 3 p.m. (by permission of the *Senatus Academicus*), Prof. W. F. Heddle, F.R.S.E., president, in the chair. The following paper, with others, will be read:—"On the Microscopic Structure of some Vitreous Basalts," by Prof. A. Geikie, F.R.S. On this occasion the attendance of gentlemen interested in mineralogy is invited, whether Members of the Society or not.

THE *Photographic News* is responsible for the following:—Everybody knows how jealously the gates of the Royal Observatory are guarded, and what difficulties even scientific men have to gain admission. But Mr. Glaisher, the worthy President of the Photographic Society, and who was until lately Superintendent of the Meteorological Department, tells a story that goes far to prove that nothing is impossible to a resolute man. A vast star shower had been anticipated and its coming heralded in every newspaper. The staff at Greenwich, with the Astronomer-Royal at their head, remained the whole night through making observations and counting the bright meteors as they fell. The weary night passed, and the small hours of the morning came, only to find the jaded observers still pursuing their duty. "That makes 10,704," said our friend Mr. Glaisher. "Beg pardon; how many?" exclaimed a voice behind him. "10,704," repeated the President of the Photographic Society; and then, not recognising the voice, he turned and saw a stranger: "Who are you, and where do you come from?" At first, the only possible conjecture was that the stranger had fallen from the clouds along with the star shower; but it was not so, for, closing a little note-book, he simply replied, "I am the special correspondent of the *New York Herald*. Thank you very much. Good morning." How that special managed to get through the park gates and elude the vigilance of the keepers; how he got inside the walls of the Observatory; how he pressed into the

sanctum of the Astronomer-Royal is a mystery to this day; but within a few hours of his interview with Mr. Glaisher the readers of the *New York Herald* printed a correct account of the marvellous star shower, together with many interesting details of the Observatory itself.

CONSUL LAYARD sends us the following notes of literary or scientific blunders, brought to his recollection by the article on "Subject-Indexes" in *NATURE*, vol. xx. p. 554. We rather think the Cape story is a replica of a still older one in the mother country:—"Some years ago, when we moved into the combined South African Library and Museum buildings, several volunteers assisted in placing the books in the shelves. One morning the librarian, with an amused smile on his face, showed me a book he had found among the medical works; it was Burton's

Anatomy of Melancholy! Next day it was back again! and while we were wondering who had so placed it, the culprit came forward and applauded himself for mending the work of 'some stupid fellow' who did not know where to place medical books! A friend sent me Miller's 'Old Red Sandstone.' It burst its cover in the post-bag coming from England, and a discussion arose as to whom it might have been sent. At last some one suggested I was the most likely owner of a work of that class, and I was summoned. On arriving at the P.O. with the sender's letter, I accosted the P.M.G. with the remark that I believed the book then in his hands was mine. 'It is,' I said, 'the "Old Red Sandstone," by Miller, who wrote "I was going to add 'The Testimony of the Rocks,' when my old friend cut me short with—"Yes, yes, I know, the jokes, the jokes!! Shades of old Joe! I gravely acquiesced, and walked off with my book."

THE observations in which Prof. Pavesi of Pavia has been lately engaged on the pelagic fauna of the lakes of Tessin and of Italy have yielded interesting results (of which there is an account in the *Archives des Sciences*, February 15). Some twenty-one lakes were examined, mostly in Italy. The tables show that *Leptodora* is found almost everywhere. *Daphnella brachyura*, *Daphnia hyalina*, *D. galeata*, *Bosmina longirostris*, *Cyclops minutus*, &c., are very common; on the other hand, *Sida crystallina*, *Daphnia quadrangula*, *Bosmina longispina*, and *Bythotrephes* are rare; lastly, *Daphnia magna*, and *D. crystallina* are localised in the single Lake of Idro. It is a curious fact that of two lakes, near each other and of the same geological origin, and frequented by the same aquatic birds, one may present hardly any pelagic forms, while the other may have many. Such are the small Lake of Candia and the Lake of Viverone (they also show a difference of the opposite kind in algological flora). The latter lake, indeed, is triple that of the former, and about five times as deep. Still, great depth is not necessary to existence of pelagic animals, though it is more favourable to their development; e.g., they multiply in the lakes of Brianza and Endine, which are only ten metres deep. Some forms, as *Bythotrephes*, are found only in the deepest lakes. As to the bathymetrical limits of the fauna, *Leptodora* lives generally, by day, at about 15m. depth. At 10 and 30m. it is generally rare, though in some cases it has been found even at 100m., and in shallow lakes is common at 5m. *Daphniura cristata* of Lake Idro is common at 5 to 15m., very rare at 50m. *Daphnia magna* is most abundant at 30 to 50m. On stormy days few forms were found at 5m. depth. The almost absolute absence of crustacea in the Lake of Garda, at 5 m. even in calm weather, is attributed to the great transparency of the water. Prof. Pavesi thinks the influence of temperature nil or inappreciable. He assigns a marine origin to the fauna in question; fiords changed to lakes, part of the isolated species dying out, others becoming adapted to new conditions of life, diffusion of these forms, by various means of transport, to neighbouring lakes of different epoch and origin, such as the lakes of Switzerland, Bavaria, and Lake Trasimeno.

This confirms Stoppani's theory of the origin of the lakes in Upper Italy.

THE *Journal of Applied Science* draws attention to a statement that has recently been made to the effect that in Thuringia, in Germany, over 1,000 tons of dried beetroot leaves are annually passed off as genuine tobacco. Beetroot, chicory, and cabbage are largely used for a similar purpose in Magdeburg and in the Palatinate. The "Vevey" cigars, which are in such favour in South Germany, contain no tobacco at all, but are entirely composed of cabbage and beet-leaves, deprived of their natural smell and taste by a special form of cultivation, and subsequently steeped in tobacco water for a lengthened period.

THE importance of the German element in the United States is evidenced by the publication of a *Deutsch-Amerikanische Apotheker-Zeitung*, the first number of which we have received.

THE West Kent Natural History Society present a satisfactory Report for 1879; it contains the address of the president, Mr. R. McLachlan, F.R.S., in which he finds something new to say about the house-sparrow.

THE Report of the Bristol Museum and Library for 1879 shows that the institution suffered somewhat in its income from the general depression, though otherwise it continues to meet with favour. The museum especially has received several valuable additions.

IN the last number of the journal published by the Newcastle-on-Tyne Chemical Society is a paper by Mr. W. G. Strype on "An Apparatus applicable to the Continuous Testing of Chamber Escapes."

AMONG the papers in No. 3 of the *School of Mines Quarterly* of Columbia College, to which we referred some time ago, we may mention Prof. Newberry's on "The Origin and Classification of Ore Deposits;" interesting notes on Mexican Mining, by Mr. J. C. F. Randolph; "Aërostation," by Mr. J. A. Navarro; and a paper on "Soap," by Mr. A. L. Colby.

THE Rev. W. Clement Ley asks us to state that in his letter in *NATURE*, vol. xxi. p. 48, he wrote "the Hon. R. Abercromby," not "Sir R. Abercromby."

THE additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus radiatus*) from India, presented by Mr. J. R. Cullin; two Striped Hyenas (*Hyæna striata*) from Arabia, presented by Capt. the Hon. F. G. Hay and Mr. Wyld; an American Red Fox (*Canis fulvus*) from North America, presented by Capt. Russell; a Carpet Viper (*Echis carinata*) from India, presented by Capt. C. S. Sturt, C.M.Z.S.; two Golden-Headed Parrakeets from Brazil, an Eyton's Tree Duck (*Dendrocygna eytoni*) from North-West Australia, purchased; a Crested Pigeon (*Ocyphaps lophotes*) from Australia, a Vulturine Guinea Fowl (*Numida vulturina*) from East Africa, deposited; a Sambur Deer (*Cervus aristotelis*), an Eland (*Oreos canna*), born in the Gardens.

### OUR ASTRONOMICAL COLUMN

THE SOUTHERN COMET.—Dr. B. A. Gould, Director of the Observatory at Cordoba, publishes the results of hasty observations of the head of the southern comet on the evening of February 4. It appeared "like a coarse, ill-defined mass of dull light 2' or 3' in diameter, and without visible nucleus." Two determinations of position were made by placing it in the middle of the field of the large equatorial and taking the readings of the circles. Thus Dr. Gould obtained the following place after correcting for refraction, and it should be mentioned that at the second observation the comet's altitude was less than 2° 42'; right ascension, 22h. 24m. 10s.; declination, -31° 29' 11" at 5h. 27m. 55s. Cordoba sidereal time, which corresponds to February 4 at 12h. 46m. 25s. Greenwich mean time. Mr. Finlay's orbit, which